

Aphantasia: An Unusual Blindness

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“If you’re having trouble sleeping, try counting sheep.” It’s likely that we’ve all heard this phrase at some point in our childhood. Naturally, when you’re told to count sheep, you’re not counting literal sheep, you’re counting imaginary ones. This method seems quite easy and accessible if you assume that everyone is capable of conjuring an image of sheep in their minds, but have you ever considered the possibility that there are those who are unable to actually see the sheep? The phrase “counting sheep” always confused me as a child because I have never been able to visualize the sheep at all. For the majority of my life, I assumed the phrase was a figure of speech for occupying yourself until you fall asleep. It wasn’t until recently that I discovered that many people could actually see the sheep and quite literally counted them. The inability to imagine is called aphantasia, a term coined in 2015 by Professor Adam Zeman of the University of Oxford, and it’s widely considered a neuropsychological disorder (Gallagher, 2015). As of right now, there is no known remedy for aphantasia, and, with it affecting only 2-3% of the population, it remains relatively unknown in the science world. The cause is mostly unknown though researchers are conducting experiments and tests to find out what part of the brain is responsible for imagination. There’s debate surrounding whether or not visual imagery is involved in the process of aphantasia and whether or not visual imagery is essential for memorization. With so many unknown variables, aphantasia has remained a mystery to both scientists and aphantics alike. As a result, aphantasia is usually self diagnosed and discovered later on in life due to the lack of information about it. The goal of this essay is to document the alienation aphantasics face and shed light on the condition in hopes that others may come to understand the condition.

It’s difficult for those without aphantasia to understand what it means to be unable to imagine, so I implore you to close your eyes and imagine an apple. It’s likely that you see some

rendition of an apple; be it hyper realistic or cartoon, the image is there. Aphantics see complete darkness, no apple, no image. To put it clearly, aphantasia is the complete inability to voluntarily create and see mental images. The first report of struggling to imagine dates back to 1880 when polymath Francis Galton described his inability to visualize in his piece "*Statistics of Imagination* " in which he utilized his skills as a psychometrician and administered questions to understand how others imagine (Galton, 1880). While, at the time, the term aphantasia had yet to come into existence, it's apparent that aphantasia has been around for far longer than originally speculated. With the coining of the term aphantasia, Professor Zeman led research delving into the neurological aspect and sought to understand the causes of aphantasia. As a result of research, two terms used to categorize aphantasics have become popularized: congenital and acquired aphantasia. In other words, congenital aphantasia refers to those who had never been able to imagine, and acquired aphantasia refers to those who lost their ability to imagine later on in life. It's important to note that acquired aphantasia is rather uncommon in comparison to congenital; aphantasia can be acquired after brain trauma and, on occasion, after illness. Zeman's work has paved the way for researchers today as the neurological condition has proved to be a topic of interest in the neuroscience community. Beyond a scientific presence, aphantasia has more downsides when it comes to real-world situations. The ability to imagine has proved integral to many aspects of both personal and professional life, and as such, aphantics have had to find ways to work around it.

With acquired aphantasia being so uncommon due to the lack of professional diagnoses and the rarity of this form of aphantasia, studies concerning acquired aphantasia are hard to come across. Although my research was centered around shedding light on aphantasia in a general context, I stumbled upon an example of acquired aphantasia during my research. In this case

study, a woman aged 59 was diagnosed with COVID-19 in January, 2021. Two months after overcoming a mild case of COVID-19, she informed her doctor that she had lost her ability to imagine, despite desperate attempts to visualize. This example of acquired aphantasia is jarring in that this demonstrates that the development of a neuropsychological disorder is possible even after an illness that doesn't directly affect the brain. This then begs the question of what are the causes of aphantasia.

To understand the causes of aphantasia, it's important to understand which structures in the brain perform which tasks. Aphantasics are still capable of dreaming as dreaming comes from the hippocampus, a part of the brain responsible for experiencing emotion and memory (Merriam-Webster, 2022). The origin of visual imagery is one that's often debated yet, it's mainly attributed to the visual cortex, the part of the brain responsible for converting light taken in through our eyes into images we can actually see. In fact, research has shown that the part of our brain that processes images is at work when we are imagining meaning that we are quite literally seeing what's in our minds (Dawes et al., 2020). Knowing what parts of the brain should be working when we're imagining poses the question as to what part isn't working when aphantasics try to visualize. In a study "*Quantifying aphantasia through drawing: Those without visual imagery show deficits in object but not spatial memory,*" researchers investigate the role of visual imagery on working memory, and explore the argument that visual imagery is essential for working memory. The study involved two groups (aphantasics and control) who were asked to study an image, draw the image from memory, identify the image they had been shown, and copy the image. To score the level of object information, workers assigned points to objects and identified whether each of the objects in an image was present in each drawing of that image.

While their drawings from memory were far less detailed than their counterparts, aphantasics were able to redraw the image they had seen in the image. When it came down to object recall, aphantasic individuals recalled significantly fewer objects than the control group (aphantasic mean = 4.98, control mean = 6.32). To answer the question of whether aphantasics also show an impairment in the spatial placement of the objects, subjects were asked to draw an ellipse around the general area of specific objects. It was found that aphantasics had spatial accuracy that was almost equal to if not better than the control group. These results demonstrate that “aphantasic participants [...] report fully intact verbal recall abilities, and our results suggest that they may be using symbolic strategies in combination with accurate spatial representations, to compensate for their lack of visual imagery” (Bainbridge et al., 2021). To go a step further, researchers have commonly questioned whether visual working memory was a necessity when it came to being able to recall information. Overall, the results of the aforementioned study “point to a dissociation in imagery between object-based information and spatial information” (Bainbridge, et al., 2021). To put it simply, the fact that the aphantasics were able to recall and reproduce images despite being unable to imagine them means that imagination isn’t necessary in the context of memory.

Another study, “*Visual working memory in aphantasia: Retained accuracy and capacity with a different strategy,*” sought to affirm the information we currently have about aphantasia. In this study, two groups (aphantasics and control) were asked to go through a series of tasks and then were questioned concerning their ability to recall, and the methods they used to recall during the tasks. During the orientation visual working memory capacity task, participants were shown an initial array of four patterns and then shown a slightly rotated variation of the pattern. They were then asked to identify how much the pattern had been rotated. This task was meant to

test how well subjects were able to utilize visual working memory to identify orientation changes. In the number working memory capacity task, participants were shown a pattern of numbers in specific spots on a page. They were then shown a number in place of the original numbers and asked to identify whether the new number was higher or lower than the original value. This task tested how well the participants could recall number locations and values. In the spatial visual working memory capacity task, participants were shown an initial array of four patterns in specific locations on the page. The patterns were then moved to different locations on the page, and the participants were asked to identify how much each pattern moved. This task acted as a means of testing spatial accuracy. For the final task, participants were shown a single pattern and were given a short grace period before being shown a different pattern. They were then asked to recall one of the previous patterns and were shown a final, third pattern. Participants were then asked to identify what was different about the third pattern and the initial pattern they recalled. This was done in order to see how well participants were able to retain images and details of the image.

The results of this study showed that aphantasics and control participants had similar reactions to increased set sizes (increasing the number of patterns participants had to keep track of), and that, while aphantasics and control participants had similar responses to the questions inquiring about their use of cognitive strategies, control participants were far more reliant on visual strategies than aphantasic participants. In other words, this research proved that the strategies that aphantasic individuals said they used were “consistently different to the general population, being less visual in nature, such as labeling the image and holding this information in mind, rather than creating a detailed sensory mental representation” (Keogh et al., 2021). Although this study affirmed current claims about aphantasic individuals’ capabilities in terms of

retaining and recalling information, researchers are still unsure as to why and how aphantasics are still able to recall images without being able to visualize them. Furthermore, recalling simple images relatively soon after seeing them is passable; however, aphantasics themselves have noted that their memory is far worse than others’.

Aphantasic Benny Kapler, in his 2021 article “*Aphantasia —Out of Sight, Out of Mind*” digs into the personal effects of aphantasia by explaining that “there is zero visual recall for anything, be it a person’s face, what a word looks like, where I left my keys, a beautiful moment, childhood.” As an aphantasic, I’ve noticed that my ability to recall directions and memories from a mere few years ago is far below average. Others are able to remember experiences that I have no recollection of despite having been there. Core memories of my own like high school graduation or my first day of school are lost in the murky depths of my mind. In Nicholas Watkins’ 2018 article “*(A)phantasia and severely deficient autobiographical memory: Scientific and personal perspectives,*” he notes that he has had more trouble recollecting information than those who can imagine. While this poses a fascinating point of research in the scientific community, this can prove to be difficult and create many challenges in everyday life. Recalling the road to work or back home, professions that involve visualizing like architecture and design have proven to be far more challenging for aphantasics than for the average individual. Furthermore, the lack of awareness concerning the condition means that very few individuals take aphantasics into consideration.

I personally struggled with courses in my elementary school years due to the inability to express what it was I was having trouble with. Telling my teacher that I struggled to complete 60-second addition tests in time simply because I could not imagine the values was unfathomable to me. I lacked the self-awareness to realize that it was my inability to imagine that was holding

me back from being able to add as quickly as my peers, and it's not as though a first grade teacher would perceive a lack of imagination as a "real" problem. My teacher was quick to tell my parents that the issue was in my fundamentals: I simply did not understand the concept of addition. While my parents could see that was clearly not the issue as I was able to add in an untimed setting, it was up to them to troubleshoot and find a way for me to succeed. Therein lies a key issue: the current education system caters to an idealized type of student, and forces other students into that mold without taking the time to consider the fact that not every student follows the same path. The lack of awareness about neuropsychological disorders like aphantasia exacerbates the gap between students who are already racing down the track and those who have to put in more effort to simply reach the starting line. Despite the setbacks aphantasia seems to have given me, it's important to take a positive approach when discussing solutions.

Author of the Broken Empire series, Mark Lawrence, is an aphantasic. In his 2020 article, "*I have no mind's eye': what is it like being an author with aphantasia?*" Lawrence describes his experience with his discovery that he has aphantasia saying that he "felt suddenly robbed, as if [he] had missed out on some universal treat. And that's how the language frames it – you 'suffer' from aphantasia" (Lawrence, 2020). He mentions that, in his experience with telling others that he has aphantasia, he's often asked "how [he] even function[s], how [he] imagine[s] anything. There's a distinct vibe of pity" (Lawrence, 2020). I've had a similar experience in that, when I tell others I can't imagine, they begin describing how different their experience of the world is, and, almost apologetically, comment on how dull mine must be. Lawrence brings up a fresh perspective on aphantasia, as he "rejects aphantasia as a defect. [He] see[s] it as an alternative" (Lawrence, 2020). We all walk different paths, and we all have differences that make

us uniquely individuals. While raising awareness is important, the means by which we go about calling others to action are all the more significant.

Aphantasia is a psychoneurological disorder that remains relatively unknown among the general public. With so many unknown variables, aphantasia has remained a mystery to both scientists and aphantasics alike. With aphantasia affecting many aspects of an individual's life, it's extremely important that more research is done on aphantasia and that there is more awareness of the condition. Current studies have outlined and affirmed what we do know about the condition however, more work needs to be done in order to understand the neurology of being unable to imagine. Furthermore, the present understanding of aphantasia needs to be publicized better through forms of activism utilizing the plethora of social media platforms available. With a relatively large percentage of the population experiencing aphantasia, it's increasingly more important to raise awareness in order to accommodate aphantasics and provide a spot for those who don't follow the traditional path. With the human brain constantly changing and evolving, it's important that society continues to morph and change alongside it.

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